

**REMARKS**

Claims 1, 3, 4, 13-15, 17-22 and 24-44 are pending in the present application. In the Final Office Action mailed August 10, 2006, the Examiner rejected claims 1, 3, 4, 13-14, 22, 24-25, 34-38 and 40-41 under 35 U.S.C. §103(a) as being unpatentable over Tsunota et al. (USP 6,495,845) “Tsunota” in view of Akai (USP 5,378,894). The Examiner next rejected claims 15-21 and 42-44 under 35 U.S.C. §103(a) as being unpatentable over Hsieh et al. (USP 6,061,419) “Hsieh” in view of Tsunota. Claim 39 was rejected under 35 U.S.C. §103(a) as being unpatentable over Tsunota.

Applicant has added new claims 45-52. Support for these claims can be found in the original specification at Pg. 10, ln. 21, through Pg. 11, ln. 12. No new matter is presented.

**Finality of Office Action:**

The Examiner has prematurely issued a Final Office Action. MPEP§ 706.07(a) states that “[u]nder present practice, second or any subsequent actions on the merits shall be final, except where the examiner introduces a new ground of rejection that is neither necessitated by applicant's amendment of the claims nor based on information submitted in an information disclosure statement . . . .” Claims 34-44 were added in the office action response dated August 17, 2005. A restriction requirement was issued on October 31, 2005. In response, on November 30, 2005, Applicant elected, with traverse, that which the Examiner classified as Group I, which included new claims 34-44. In the non-final rejection dated February 8, 2006, the Examiner withdrew the previous restriction requirement and rejected some of the claims. As Applicant explained in Applicant's response filed May 8, 2006, the Examiner failed to provide grounds for the rejection of claims 42-44. However, in the Examiner's issued Final Office Action, the Examiner first rejected claims 42-44 under 35 U.S.C. §103(a) as being unpatentable over Hsieh in view of Tsunota and introduced a new ground of rejection thereof neither necessitated by an amendment not based on an IDS. The Examiner's final rejection of claims 42-44 is, therefore, premature.

The Examiner rejected claim 16 under 35 U.S.C. §103(a) as being unpatentable over Hsieh in view of Tsunota. However, the Examiner failed to assert where the subject matter of claim 16 may be taught or suggested in the prior art. Accordingly, Applicant believes that claim 16 is patentable over the art of record.

The Examiner asserted that, “[r]egarding claims 26-33, Tsunota fails to teach the claimed method of forming the scintillator.” Final Office Action, Pg. 7. However, the Examiner has not provided any statutory basis for rejecting claims 26-33. Claims 26-33 depend from claim 22,

which was rejected under 35 U.S.C. 103(a) as being unpatentable over Tsunota in view of Akai. The Examiner has not, however, provided any statutory basis under which claims 26-33 are rejected. Instead, the Examiner inserted the assertion that Tsunota fails to teach the claimed method after the discussion of claim 21 without any apparent reasoning. As such, Applicant believes that the Examiner's rejection of claims 26-33 is improper.

Accordingly, Applicant requests reconsideration of the finality of the rejections as premature. Applicant has separately and concurrently herewith filed a Petition for Supervisory review under 37 CFR 1.181 to petition review of the issuance of a premature Final Office Action. As such, because Applicant believes that the Final Rejection was premature and thereby improper, Applicant has treated the Final Office Action mailed August 10, 2006 as a Non-Final Office Action. Applicant subsequently filed this timely response in which claims are amended, and Applicant hereby presents arguments regarding the merits of the Examiner's rejections. Notwithstanding Applicant's request for reconsideration and Applicant's treatment of the Final Office Action mailed August 10, 2006 as a Non-Final Office Action, for the sake of clarity in the remarks below and in the record, Applicant will continue to refer to the Office Action mailed August 10, 2006, as a "Final Office Action."

**Response to rejections:**

The Examiner rejected claims 1, 22, 34, 36, 37, and 41 under 35 U.S.C. §103(a) as being unpatentable over Tsunota in view of Akai. Claim 1 calls for, in part, a reflector interstitially disposed between at least two adjacent scintillators, the reflector including a light absorption element disposed between a pair of reflective elements. Claim 22 has been amended to further define the invention and, as amended, calls for, in part, disposing a light absorbing composite layer between the reflective layers that are disposed between adjacent scintillators. Claim 34 calls for, in part, a reflector interstitially disposed between at least two adjacent scintillators, the reflector including a light absorption element disposed between a pair of reflective elements, wherein the light absorption element is configured to absorb x-rays. Claim 36 calls for, in part, a reflector interstitially disposed between at least two adjacent scintillators, the reflector including a light absorption element disposed between a pair of reflective elements, wherein the light absorption element is configured to reduce x-ray punch through. Claim 37 calls for, in part, a reflector interstitially disposed between at least two adjacent scintillators, the reflector including a light absorption element disposed between a pair of reflective elements, wherein the light absorption element includes a high atomic number metal composite. Claim 41 calls for, in part, a reflector interstitially disposed between at least two adjacent scintillators, the reflector including a

light absorption element disposed between a pair of reflective elements, wherein the pair of reflective elements include TiO<sub>2</sub>.

In the office action, the Examiner relied on Tsunota for allegedly disclosing “a light absorbing element (3) disposed between a pair of reflective elements.” *Final Office Action*, Aug. 10, 2006, Pg. 2. However, Tsunota fails to teach or suggest at least the element “light absorbing.”

Tsunota discloses a sintered ceramic having high radiation shielding capability that preferably has a “high light reflecting performance.” *Tsunota*, Abstract. “Scintillators 2 are arranged adjacent to each other on a semiconductor photodetector element 1, and radiation shields 3 are provided between scintillators 2.” *Id.*, Col. 2, lns. 46-49; Fig. 1. “[L]ight reflecting films 4 are provided between the radiation shields 3 and the scintillators 2.” *Id.*, Col. 2, lns. 54-56; Fig. 1. The radiation shield 3 is described as follows:

[A] mixture of 0 to 50 mol %, or more desirably 3 to 33 mol %, in total of at least one rare-earth oxide selected from the group of Gd, La, Ga, Y, Ce, Nd, Pr, Sm, Dy and Yb oxides, and 0 to 33 mol %, or more desirably 0 to 28 mol %, in total of at least one alkali-earth oxide selected from the group of Ca, Ba, Mg and Sr oxides, and the balance being at least one of oxides of V, Ta and Nb compose as the sintered ceramics for use as the radiation shield 3. *Id.*, Col. 2, lns. 57-67.

Tsunota further teaches that when “the radiation shield 3 is made of a white sintered ceramics,” it has “not only radiation shielding capability but also high light reflecting capability . . .” *Id.*, Col. 3, lns. 1-7. Accordingly, Tsunota teaches a variety of sintered ceramics that serve as radiation shields positioned between reflecting films 4. The ceramics described by Tsunota are explicitly light reflecting and not light absorbing. As such, the Examiner has mistaken the word “reflecting,” as taught by Tsunota, to mean “absorbing,” as claimed by the Applicant.

Akai teaches a scintillators channel separator that optically separates scintillation light emitted from scintillator elements. *Akai*, Abstract. The scintillator channel separator includes a first thin film capable of blocking transmission of scintillation light, and first and second polymer sheets. *Id.*, Abstract. The first thin film is sandwiched between the first and second polymer sheets. *Id.*, Abstract. Reflection layer 13 is positioned on scintillators 11. “A portion of the scintillation light is reflected on the scintillators channel separator 120.” *Id.*, Col. 4, lns. 67-68. “[S]cintillation light is substantially completely reflected from the polyester sheet 101 and the

aluminum thin film 202 employed in this scintillators channel separator 120. *Id.*, Col. 5, Ins. 4-6. Akai fails to a light absorption element disposed between a pair of reflective elements.

Accordingly, that which is called for in claims 1, 22, 34, 36, 37, and 41 is not shown, disclosed, taught, or suggested in the art of record. As such, Applicant believes claims 1, 22, 34, 36, 37, and 41, and the claims which depend therefrom, are patentably distinct from the art of record.

The Examiner rejected claims 15-21 and 42-44 under 35 U.S.C. §103(a) as being unpatentable over Hsieh in view of Tsunota. Claim 15 calls for, in part, a reflector assembly disposed between adjacent scintillators of the scintillator array, and wherein each reflector assembly includes a composite layer sandwiched between at least a pair of reflective layers, and wherein the composite layer includes a high-Z metal and a low-viscosity polymer.

The Examiner relied on Tsunota for allegedly teaching a reflector assembly that “includes a composite layer (3) sandwiched between at least a pair of reflective layers (4); and wherein the composite layer includes a high-z metal and a low-viscosity polymer (column 8 line 57), reflective material including TiO<sub>2</sub> (column 6 line 30-40 and column 8 line 57).” *Final Office Action*, Aug. 10, 2006, Pg. 6. However, the Examiner has improperly interpreted the Tsunota reference.

Tsunota teaches a radiation detector having a multitude of scintillators 2, a radiation shield 3 provided between scintillators 2, and a light reflecting film 4 provided between radiation shields 3 and scintillators 2. *See Tsunota, col. 2, ins. 44-67.* Tsunota teaches that “[i]n the present invention, the radiation shield 3 is made of a sintered ceramic material having radiation shielding capability” and that a mixture of titanium oxide and epoxy resin may be used as the light reflecting film 4. *Id.* Tsunota collectively calls the radiation shield and the light reflecting film 4 a “separator.” *Id.*

The Examiner asserted that column 8, line 57 of Tsunota teaches that the composite layer includes a high-z metal and a low-viscosity polymer. *Final Office Action*, Aug. 10, 2006, Pg. 6. Applicant respectfully disagrees. As called for in claim 15, the composite layer is sandwiched between at least a pair of reflective layers. Tsunota discloses a separator “made of conventional Mo and titanium oxide (including a resin) . . . .” *Tsunota*, col. 8, Ins. 41-45. Accordingly, since Tsunota teaches that the light reflecting film, or layers, may be made of titanium oxide and epoxy resin, the “conventional” separator must have a radiation shield, or composite layer, made of Mo. However, claim 15 calls for the composite layer to include a high-Z metal and a low-viscosity

polymer. The “conventional” radiation shield of Tsunota, made of Mo, includes neither a high-Z metal nor a polymer.

Additionally, Hsieh fails to teach or suggest a reflector assembly that includes a composite layer sandwiched between at least a pair of reflective layers wherein the composite layer includes a high-Z metal and a low-viscosity polymer.

Accordingly, that which is called for in claim 15 is not shown, disclosed, taught, or suggested in the art of record. As such, Applicant believes claim 15, and the claims which depend therefrom, are patentably distinct from the art of record.

Applicant has amended 42 to call for, in part, a reflector assembly that includes a first light absorptive layer sandwiched between at least a pair of reflective layers, wherein the at least a pair of reflective layers includes TiO<sub>2</sub>. As explained above, the ceramics comprising the radiation shield described by Tsunota are explicitly light reflecting and not light absorbing.

Applicant has amended claim 43 to call for, in part, a reflector assembly disposed between adjacent scintillators of the scintillator array, wherein each reflector assembly includes a first layer comprising a high atomic number metal and a low viscosity polymer, the first layer sandwiched between at least a pair of reflective layers. Applicant has amended claim 44 to call for, in part, a reflector assembly disposed between adjacent scintillators of the scintillator array wherein each reflector assembly includes a first layer sandwiched between at least a pair of reflective layers, the first layer including a low viscosity polymer comprising one of epoxy and polyurethane, and wherein the reflector assembly is cast between adjacent scintillators. As explained above, while Tsunota may disclose a separator comprising Mo sandwiched between layers of a mixture of titanium oxide and epoxy, Tsunota fails to teach that a first layer sandwiched between at least a pair of reflective layers comprises either a high atomic number metal or a low viscosity polymer.

Accordingly, that which is called for in claims 42-44 is not shown, disclosed, taught, or suggested in the art of record. As such, Applicant believes claims 42-44, and the claims which depend therefrom, are patentably distinct from the art of record.

**Conclusion:**

Therefore, in light of at least the foregoing, Applicant respectfully believes that the present application is in condition for allowance. As a result, Applicant respectfully requests timely issuance of a Notice of Allowance for claims 1, 3, 4, 13-15, 17-22 and 24-52.

A fee of \$400 for entering the aforementioned claims has been paid via EFS-WEB. Applicant hereby authorizes charging of Deposit Account No. 07-0845 for any additional fees associated with entering the aforementioned claims.

Applicant appreciates the Examiner's consideration of these Amendments and Remarks and cordially invites the Examiner to call the undersigned, should the Examiner consider any matters unresolved.

Respectfully submitted,

/Timothy J. Ziolkowski/

Timothy J. Ziolkowski  
Registration No. 38,368  
Phone 262-268-8100  
tjz@zpspatents.com

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**P.O. ADDRESS:**

Ziolkowski Patent Solutions Group, SC  
136 S. Wisconsin St.  
Port Washington, WI 53074  
262-268-8100

Respectfully submitted,

/Kent L. Baker/

Kent L. Baker  
Registration No. 52,584  
Phone 262-268-8100  
klb@zpspatents.com